What is claimed is:

1. A method of fabricating a buried heterostructure semiconductor device, comprises:

producing a hybrid current confinement region adjacent to active layers of the device, by:

disposing a sequence of the p-n-p layers surrounding the active layer; and

disposing a semi-insulating material around the p-n-p layers surrounding the active layers.

2. The method of claim 1 wherein the semiconductor device is a buried heterostructure laser.

3. The method of claim 1 wherein the semi-insulating material is InP doped with Fe to provide current confinement for current generated in the active layer.

4. The method of claim 1 wherein producing a sequence of p-n-p layers comprises:

defining a mesa of a semiconductor material supporting an active layer comprising multiple quantum well (MQW) active regions and confinement layers with defined gratings and grating overgrowth regions.

5. The method of claim 4 wherein producing further comprises:

selectively growing a p-n current blocking structure on sidewalls of the mesa.

6. The method of claim 5 wherein producing further comprises:

depositing a doped p type capping layer over the mesa to provide the n-p-n-p current blocking structure.

7. The method of claim 6 wherein producing further comprises:

etching away portions of the n-p-n-p current blocking structure using a wide oxide mask disposed over the capping layer.

8. The method of claim 5 wherein producing further comprises:

re-growing semi-insulating semiconductor material over the etched n-p-n-p blocking structure.

9. The method of claim 5 wherein producing further comprises:

providing contact metalization on the semiconductor contact layers.

10. A semiconductor device comprising:

a semiconductor substrate supporting an active region comprised of a multiple quantum well active regions and confinement layers having defined gratings and grating overgrowth regions to produce a laser device; and

a current confinement layer comprising:

a sequence of doped n-p-n-p semiconductor layers to produce a n-p-n-p blocking structure; and

a semi-insulating semiconductor material adjacent to the etched n-p-n-p blocking structure.

11. The semiconductor device of claim 10 further comprising:

a heavily doped contact layer over the active layer.

12. The semiconductor device of claim 10 wherein the semi-insulating material is Fe doped InP.

13. The semiconductor device of claim 10 wherein the semiconductor substrate material is n-type doped InP.

14. The semiconductor device of claim 10 wherein the contact material is.p-type InGaAs.